



## AGRICULTURAL ENGINEERING NEWS LETTER

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### Crop Storage on the Farm

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We are frequently asked for information on corn cribs and granaries. The expectation that cribs will be sealed for federal corn loans and will have to meet certain standards of shelter before loans are approved is encouraging a program of improving farm storage facilities. The government is also considering a 7 cent per bushel benefit for wheat stored on the farm and is suggesting that granaries should be so improved that they will be eligible to be sealed and the grain not spoil or be damaged if kept a year.

#### Reasons for Farm Storage

During the rush of threshing is not the most profitable time to haul grain to market. Usually a part of the crop can be cleaned or selected to bring top price, and part can be used on the farm. The part sold usually brings a higher price if not dumped on the market at threshing time. If the crop is not in good condition, it is not wanted by the country elevators; hence, it can then be marketed only at a loss. The cost of storage on the farm is generally lower than in elevators. On many farms part of the crop should be marketed through livestock, rather than in the form of an over-supply of crops.

In 1929-30, about 76 per cent—766,000 bushels—of all the corn shipped from one county in Minnesota was below number 3 grade. This condition resulted in the farmers and business men losing over \$80,000. One of the chief reasons pointed out by the Crop Improvement Association, for the low grade, was poor storage.

#### Types of Shelter

Ear corn usually needs to dry after husking; hence, the common practice of storing it in slatted cribs where it becomes so thoroly dried that it will keep through the warm damp weather of spring. Potatoes, if stored in bulk, need to have air passed through and around the bin to remove moisture. They must not be allowed to freeze; hence, they are generally stored in bins partly or wholly underground. Grains, with 14 per cent of moisture or less, may be kept indefinitely in a dry place where birds, mice, rats or other pests do not attack them.

#### Location and Construction

Cribs and granaries should not be located where heavy shade will delay dry-

ing. It is generally an advantage to have the floor up at least a foot above the surface of the ground. Usually a crib 7 feet wide will allow the air to pass through and dry the corn. The driveway crib permits of more sturdy construction and, owing to greater height, permits the corn to dry in splendid shape. If corn is not thoroughly dry when put in the crib, installing A-shaped ventilators along the middle of the floor lengthwise of the crib is very good insurance against spoiled corn.

The foundations and floors of cribs and granaries should be given more attention in order to prevent rapid depreciation. If the foundation settles, the floor is usually damaged, the usefulness of the building greatly reduced, and its life shortened. A wooden floor needs to be off the ground far enough to give ventilation beneath. Concrete floors need to be well made with waterproof material placed under the concrete to secure a dry floor.

Braces are needed in high buildings to resist the wind when the crib is empty. Extreme care in nailing braces and ties will be repaid by additional years of service. If a storage building is racked when empty, it will be severely strained when filled. It will not last long unless kept plumb at filling time. Cross ties are placed 4 feet apart in cribs to allow the corn to settle between them without breaking them, as frequently occurs if spaced closer.

Emphasis should be placed on the roof of storage buildings. Leaks during spring rains are sure to cause a loss from spoilage. Roofing materials, known to give protection and with which local workmen are familiar, should be used, rather than new, untried products. Farm structures are exposed to more severe winds than are village buildings; hence they frequently leak within a few years when covered with materials commonly used on town houses.

A crib filled by shoveling in two loads per day may have time for the corn to dry out and settle gradually into place, while with a machine husker and elevator, the crib may be filled so rapidly that there is very little drying, the corn piles up, and then crashes down putting a severe strain on braces, studs, and ties. With the elevator a high crib is desirable. The corn is up where air currents pass through it and insure drying.

The simplest method of supporting bins

over the driveway is to use strong joists. Trusses, braces, and rods are satisfactory only when installed by an experienced workman. Joists are usually more dependable and less expensive. A 2x12 is four times as strong as a 2x6. Use deep joists and plenty of them.

To fulfill federal loan requirements for a sealed crib, the following standards should be met: substantial foundation; strong floor; slatted walls; building narrow enough to permit cross ventilation; roof tight and substantial; framing strong and well braced; crib enclosed so it cannot be entered without breaking the seal.

#### Cost and Profit

Cribs and granaries must last a number of years in order that the annual cost per bushel of storing a crop may be reasonably low. Ear corn requires twice as much space per bushel as does grain. Permanent cribs can be built for about 18 cents per bushel of capacity. The annual cost is about 2 cents per bushel of corn sheltered. Grain requires more expensive shelter than corn, but as a bushel of grain requires only one and one-quarter cubic feet of space, the cost per bushel capacity of a granary is only about 14 cents, or about one and one-half cents, annually.

The low cost of farm storage is a challenge to each farmer to store his crop. At harvest time farmers are often obliged to sell part of the crop immediately to secure cash to meet farm expenses. "Flooding the market" as it is called usually results in the price being higher just before a new crop comes on the market. In Minnesota, the following months are usually the periods of high prices in the several crops: wheat, July; corn, July or August; oats, January; flax and potatoes, April.

Anyone building a crib should check the following points:

1. Protection from rain and snow.
2. Ventilation.
3. Size.
4. Durability.
5. Convenience for filling and emptying.
6. Cost.

The University Department of Agriculture has prepared plans of storage cellars, corn cribs, and granaries. A list of the plans available may be secured from the Bulletin Office, University Farm, St. Paul, Minnesota.